

Delaware Nutrient Management
Program

DELAWARE CONSERVATION
PRACTICE STANDARD

CORN STALK NITRATE TEST

(Reported by No.)

DEFINITION

The end-of-season corn stalk nitrate test is used to assess the nitrogen status of a corn crop at the end of the growing season.

PURPOSES

This practice may be applied for one or more of the following purposes:

1. Assess nitrogen status at the end of growing season.
2. Improve nitrogen management programs on a site-specific basis.
3. Determine if corn had been under or over-fertilized.

**CONDITIONS WHERE PRACTICE
APPLIES**

This practice applies where:

1. Producers need to improve their nitrogen management programs.
2. Plants show visual signs of a nitrogen deficiency, such as “yellowing”.
3. Plants appear to be getting excessive amounts of nitrogen and appear dark green, though this is less obvious than “yellowing”.

CONSIDERATIONS

When sampling, avoid taking samples from diseased or damaged stalks. Samples should be taken from corn grown in a uniform soil type with the same management history. Corn stalks should be sampled a minimum of one week after black layers form on approximately 80% of the kernels of most ears of corn. Samples can continue to be taken until the corn is harvested.

When interpreting results, consider other factors that may have influenced growth during the season, such as unusually wet or dry weather or deficiencies in other essential elements.

CRITERIA

Materials. Collect 15, 8-inch sections of corn stalk (between 6 and 14 inches above the ground) from each sample area. Remove leaf sheaths and avoid any damaged or diseased plants.

Immediately after samples are taken, they should be stored in paper bags to allow for drying and to minimize mold growth and shipped to a soil and plant testing laboratory familiar with the corn stalk nitrate test.

Interpretation of Results.

The concentration of nitrate-nitrogen found in corn stalks will fall into one of four categories: (1) Low (<250 ppm); Marginal (250-700 ppm); Optimum (700-2000 ppm), or Excessive (>2000 ppm).

Based on these test results and appropriate consideration of other factors, producers can adjust their nitrogen management program in future years where they could apply more nitrogen on fields that had low corn stalk nitrogen and less of fields with excessive corn stalk nitrogen. After several years of using this test, producers will begin to identify nitrogen management practices, including rates, forms, and times of application that tend to result in optimum amounts of plant available nitrogen in corn stalks at the end of the season.

REFERENCES

1. Hansen, D., G. Binford, T. Sims. 2004.
End-of-Season Corn Stalk Nitrate Testing to
Optimize Nitrogen Management. University
of Delaware Cooperative Extension Fact
Sheet:
<http://extension.udel.edu/factsheets/end-of-season-corn-stalk-nitrate-testing-to-optimize-nitrogen-management/>